Large datasets collected on existing cohorts for the study of OP may be able to tell us more about OA, particularly those of the general population used as a screening tool for a clinical trial.
The aim of this study is to measure the frequency and severity of hip OA from DXA scans in a cohort of postmenopausal women and investigate the relationship between OA, OP and bone density and whether these factors can predict the 10-year probability of Total Hip Replacement (THR).
Methods: The North of Scotland Osteoporosis Study (NOSOS) is a prospective longitudinal study comprising 1,847 women aged 60-82 years recruited from the general population in Aberdeen (N=1108) and Dingwall (N=811). DXA images of both hips were obtained at baseline (2001-2003) using LUNAR PRODIGY scanners. Intra-reliability for KLG was assessed using 101 images by Quadratic Weighted Kappa (QWK) using the Atlas of Standard Radiographs of Arthritis (2005). 1455 hips from 744 women from the Dingwall cohort were KL graded and presence/absence of joint space narrowing, osteophytes, sclerosis, cysts and deformity recorded. 4 hips (3 participants) were excluded for poor image quality, 1 participant was excluded due to a fused hip joint. The hip with the highest KLG was used to classify OA severity. The OA threshold was set at KLG≥2. Comparisons between KLG, baseline NOSOS variables, and 10 year Scottish Morbidity Record data for THR or hip fracture (ICD codes) were tested using SPSS. One way ANOVAs and Kruskal Wallis were used to compare KLGs with anthropometric measures and hip and spine T-scores (bone density). Chi-squared was used to compare KLG with OP and logistic regression to test whether KLG could predict 10-year THR or hip fracture (adjusted for age, weight and height).
Results: Intra-reliability for KLG was "very good" (QWK = 0.86). 4% of women showed no radiographic evidence of OA (KLG0), over half (58%) of women were KLG1 and 38% (N=283) had radiographic OA (KLG≥2). Participants were aged 59.3-80.8 years (median 69.2). Significant differences were found in age (P=0.011), though not height or weight between the different KLGs. An increase of one KLG resulted in over a four times increased risk of THR, OR=4.13 (95%CI 2.77-6.16) P<0.001, but was not predictive of hip fracture OR=1.32 (95%CI 0.71-2.45) P=0.39. No significant difference was found in the proportion with or without OP at each KLG (P=0.13 Figure 1).There was a significant relationship between T-score and KLG at the spine (P=0.018) and at the right and left femoral neck (P=0.003 and 0.002 respectively) with the same, but non-significant pattern at the right and left total hip site (P=0.742 and 0.477 respectively).

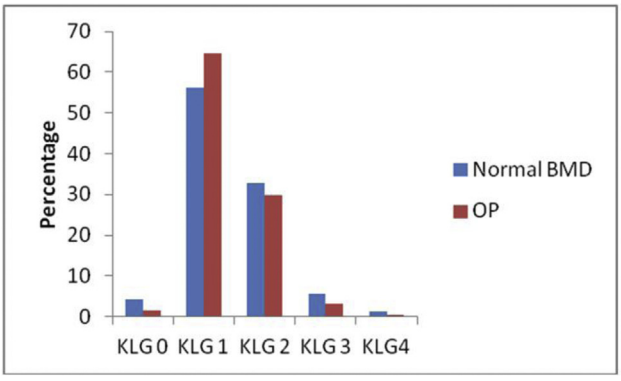

Figure 1. Similar proportions of OP and Normal BMD were observed across the KLGs
Conclusions: In this population, the prevalence of radiographic hip OA was 38%, though many showed signs of early OA (KLG1). Unsurprisingly, KLG predicted 10 year THR, but interestingly OA did not protect against OP, or 10 year hip fracture risk, even though significant differences in bone density were seen between KLG in the spine and femoral neck. This study has shown that cohort studies designed to study OP can be used to investigate radiographic OA with the potential to give new insights into the epidemiology and progression of osteoarthritis and its relationship with osteoporosis.

682
DEFINING PATIENT APPROPRIATENESS FOR TOTAL JOINT ARTHROPLASTY OF THE HIP AND KNEE

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Purpose: Primary hip/knee total joint arthroplasty (TJA) is mainly performed for osteoarthritis (OA). TJA rates are rising due to increased lifespan and obesity, technical advances, and a shift in TJA perceptions; the greatest rise is in those <60 years old. Younger age at TJA increases revision risk; revision is less successful and more costly. Thus, there is a need to ensure that TJA is being used appropriately. A decision support tool to aid selection of TJA candidates may improve outcomes. To this end, our objective was to determine criteria for TJA appropriateness with input from key stakeholders.
Methods: Focus groups and interviews were conducted separately in people with hip/knee OA, TKA surgeons, and hospital administrators to assess perceptions of 'TJA appropriateness'. Interviews/focus groups were led by an experienced qualitative researcher and audio-taped and transcribed verbatim. A subset of transcripts was reviewed independently by two qualitative researchers to identify distinct themes that emerged. The themes were then compared and discussed until consensus was reached and a coding scheme generated. Transcripts were coded using this scheme and content analysis performed to identify TJA appropriateness themes by group. Triangulation of themes identified unique appropriateness criteria, which were then fed back to participants. For each theme, participants were asked to indicate their level of agreement with its inclusion in assessing patients' appropriateness for TJA ('definitely agree' to 'definitely disagree'). Surgeons and people with OA were also asked to rank order TJA outcomes based on their importance in determining post hoc whether a TJA had been 'appropriate', from 1, 'very important' to 5, 'not at all important' (no serious complication, improved pain and function, satisfaction, and they would undergo TJA again).
Results: 58 people with OA attended 11 focus groups (mean age 72 yrs; 79% female). They equated appropriateness with surgical candidacy. Pain intensity and ability to cope with pain were considered most important in determining candidacy. 'Psychological readiness and motivation' were also considered important when considering suitability for surgery. 14 interviews were conducted with surgeons (12 male; mean age 50 yrs). Surgeons identified joint symptoms and their impact on patients' quality of life as important in determining TKA appropriateness, but placed greater importance than patients on impairments (e.g. joint stability). They spoke of 'surgery as a last resort', i.e., that appropriate non-operative treatments be tried first, that patient's expectations be realistic, and that the benefits of surgery outweigh the risks. Neither group felt that patient age, social factors, obesity, health status or x-ray severity, on their own, were important in determining appropriateness. Thirteen Interviews in hospital administrators found that increased transparency regarding how TJA decisions are made was desired. There was agreement on four appropriateness criteria: patient has demonstrable need for TKA (OA impacting quality of life, non-surgical treatment tried); is ready, willing and able to undergo surgery (medically stable; willing and able to adhere to post-op rehab); has realistic expectations; and the likelihood of benefit exceeds surgical risks (i.e., net benefit). Surgeons ranked 'patient satisfaction' as most important in determining TJA benefit; people with OA ranked pain relief highest.
Conclusions: Four TJA appropriateness criteria were identified: demonstrated TKA need; ready, willing and able to undergo surgery; realistic expectations; and benefit greater than risk, where benefit incorporated both patient-reported improvement in knee pain and satisfaction with results. Research is needed to assess the predictive validity of these criteria, evaluated pre-TKA, for subsequent attainment of TKA benefit to inform the development of a TKA decision support tool.